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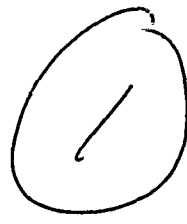
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DEPARTMENT OF THE ARMY
HEADQUARTERS
159TH ENGINEER GROUP (CONST)
APO 96491



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14 February 1967

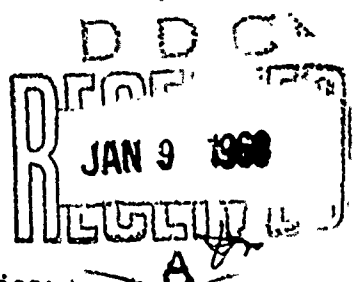
SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65) for
Quarterly Period Ending 31 January 1967

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United States Army Engineer Command Vietnam (Prov)
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Wash. D.C. 20310

Section 1, Significant Organization or Unit Activities:

1. Command: 3

a. This report covers the following headquarters and units with arrival and operational dates in the theater as indicated:

<u>UNIT</u>	<u>ARRIVAL</u>	<u>OPERATIONAL</u>
HHC, 159th Engr Gp (Const)	30 Oct 65	30 Oct 65

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<u>UNIT</u>	<u>ARRIVAL</u>	<u>OPERATIONAL</u>
46th Engr Bn (Const)	25 Sep 65	4 Oct 65
Advance Party, 62nd Engr Bn (Const)	28 Nov 66	28 Nov 66
62nd Engr Bn (Const)	28 Jan 67	28 Jan 67
15th Engr Bn (Cbt)	20 Oct 66	2 Nov 66
169th Engr Bn (Const)	30 May 66	10 Jun 66
103d Engr Co (CS)	5 Feb 66	22 Feb 66
Co C, 577th Engr Bn (Const)	2 Aug 66	5 Aug 66
617th Engr Co (PB)	4 Nov 65	11 Nov 65
43d Engr Co (DT)	12 Sep 66	25 Sep 66
643d Engr Co (PL)	31 Oct 66	8 Jan 67
536th Engr Det (PC)	5 Feb 66	11 Mar 66
551st Engr Det (WD)	18 Jan 67	*

* Pending equipment arrival

b. Mission: The mission of the 159th Engineer Group (Const) is to accomplish engineer construction and to provide combat support when required.

c. Area of Responsibility: At the beginning of the reporting period the boundaries of the 159th Engineer Group extended from the Vung Tau - Long Binh - Saigon Region south and west to include the entire Me Kong Delta. On 9 Jan 67, this was reduced to the area between the Nha Be - Song Dong Nai Rivers and a line approximately 15 kms east of National Route 15 below Bien Hoa. Also included were the separate Saigon City area and an area about Dong Tam near My Tho in the MeKong Delta.

d. Assignment: With the formation of US Army Engineer Command Vietnam (Prov), the 159th Engr Gp was assigned directly to USAECV(P). The 159th Engr Gp Hqs is located in Long Binh. D Co, 46th Engr Bn, the 536th Engr Det (PC) and the quarry section of the 103d Engr Co (CS) are located in Vung Tau.

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e. Movements, Attachments, and Detachments:

(1) The 643d Engr Co (PL) was attached to the 159th Engr Gp on 8 Nov 66.

(2) The 62nd Engr Bn (Const) was attached to the 159th Engr Gp on 10 Dec 66. (The phased movement of the unit from Phan Rang, RVN, took place during the period 28 Nov 66 to 28 Jan 67).

(3) The 15th Engr Bn (Cbt) was detached from the 159th Engr Gp on 20 Dec 66 (This unit was assigned to its parent unit the 9th Inf Div).

(4) The 551st Engr Det (WD) was attached to the 169th Engr Bn (Const) on 18 Jan 67.

(5) The 617th Engr Co (PB) was detached from the 79th Engr Gp and attached to the 159th Engr Gp on 21 Jan 67.

(6) Co C, 577th Engr Bn (Const) deployed to Dong Tam on 21 Jan 67.

f. Visitors and Awards: Due to many important visitors to the 159th Engr Gp Headquarters a special briefing featuring color slides and a narrative discussion of the types of construction projects has been prepared. The following visitors were given an official briefing and tour of 159th Engr Gp construction during the reporting period:

7 Nov 66: BG Dalrymple, OCE

19 Nov 66: BG Raymond, MACV-DC

4 Dec 66: COL Bonaparte, USAF

7 Dec 66: MG Plogor, CG, USAECV(P) and Staff

23 Dec 66: Honor Guard from 159th Engr Gp furnished for visit of GEN Johnson C/S, US Army. (No briefing or tour)

10 Jan 67: BG Duke, CG, 18th Engr Bde

22 Jan 67: GEN Beach, CIG, USARPAC

On 24 Jan 67: LTG Engler, DCG, USARV presented the Meritorious Unit Citation Award to the 62nd Engr Bn (Const) at Long Binh. Individual awards received by members of the 159th Engr Gp during this period totaled 16 Bronze Stars Medals, 35 Army Commendation Medals, and 1 Purple Heart Medal.

2. Personnel, Administration, Morale, and Discipline: The consolidated strength figures for the entire 159th Engr Gp are as follows:

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a. 30 November 1966 *

	<u>OFF</u>	<u>WO</u>	<u>EM</u>	<u>TOTAL</u>
Authorized:	105	22	2470	2597
Assigned:	99	18	2574	2691

b. 31 December 1966

Authorized:	139	30	3321	3490
Assigned:	129	25	3281	3435

c. 31 January 1967

Authorized:	142	30	3447	3619
Assigned:	140	25	3252	3417

* Does not include the 15th Engr Bn (Cbt) which had the following strength:

Authorized:	44	2	934	980
Assigned:	44	2	915	961

The 159th Engr Gp employed an average of 1400 indigenous personnel for construction purposes.

Overall assigned personnel strengths of the Group has averaged approximately 90% of authorized strength excluding transients. Shortages exist primarily in MOS 62E (Construction Machine Operator) of which there is about a 15 percent shortage and in MOS 51H (Construction Foreman) of which there is a 20 percent shortage. Both MOS's are key engineer positions. Officer shortages in the lieutenant grades exist with a Group average of 10 vacancies.

The Rest & Relaxation (R&R) out-of-country program remains extremely popular, and has averaged 10 quotas per company per month (a quota fill of 95 - 100% participation). In country R&R at Vung Tau has averaged 1 quota per month per company. Additional quotas for this popular and relatively inexpensive R&R program could be used if available, due to the high demand for this opportunity.

The recently authorized Special Leave program which authorizes a free 30 day leave to anywhere in the free world exclusive of travel time for individuals who extend their normal tour for six months has been an effective incentive for retention of personnel. During this period approximately 150 individuals have extended their tours. The program continues to average 40 - 60 extensions per month and is considered extremely beneficial due to the training and experience that is retained in Vietnam for the additional period.

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Intra-Group transfers of personnel between units were necessary during this reporting period to break up rotational humps. Approximately 100 individuals were shifted between the 169th Engr Bn and 46th Engr Bn to help alleviate a 350 man December rotational requirement in one battalion. Curtailments of up to 30 days for individuals with available replacements and short voluntary extensions were also used to prevent the simultaneous rotation of a large body of experienced personnel.

The Group prepares 41 recurring personnel and administrative reports to be submitted to higher headquarters: 3 quarterly, 35 monthly, 1 weekly and 2 daily. A reports roster is maintained to insure timely receipt and submittal. In addition there has been a large volume of "one-time" reports which has posed a heavy drain of effort on all staff sections. A continuous updating of Group Regulations has been required to clarify and supplement regulations from higher headquarters.

Morale within the 159th Engr Gp remained high during the reporting period. Command emphasis has been given to good working conditions and decent living provisions. The continuous project completions gave the men a feeling of accomplishment and, in general, the spirit of the men has been energetic in the finest engineer tradition.

Recreational activities have been stressed to make the off-duty hours more enjoyable and to provide a relaxing atmosphere on special occasions. Visiting celebrities such as Martha Ray, Stan Musial, Hank Aaron, and Red Barber in addition to various bands and entertainment troupes have been seen at the Group theaters. A Group volleyball tournament, basketball and softball competitions and horseshoe games are typical of the athletic opportunities that have also been provided for after duty recreation. These activities have noticeably enhanced morale.

Discipline problems have been minimal during the period. The extensive work hours, and attention to personal problems at the unit level has kept discipline problems at a low rate. Use of Article 15 punishment has been preferred to Courts Martial action in most situations involving minor offenses.

3. Intelligence and Counterintelligence: The combat intelligence functions of the Group have been negligible due to the primary emphasis on construction in relatively secure areas. Reconnaissance activities in support of II Field Force Vietnam (IIFFV) were limited to roads in the Dong Tam area, and maintenance of bridge classification markings in the Group area of responsibility.

Within the definition of engineer intelligence the Group has been a primary source of information on construction estimates, local engineering material resources, and real estate evaluation from a construction viewpoint. Surveys for laterite, rock and water have been made in new areas, as well as analyses for development of roads, bridging, and airfields.

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Intelligence information on the enemy is obtained on a daily basis from the morning briefing conducted at Hqs IIFV. Pertinent information is then forwarded to all units. Additional intelligence is obtained through the Security Section, Long Binh Post. All defense and physical security plans of 159th Engineer Group units in the Long Binh Post Area are controlled directly by the CO, 159th Engineer Group and are coordinated with the Long Binh Post Hqs.

There have been no active counterintelligence assignments by the 159th Engr Gp other than routine reporting of significant or unusual activities.

4. Operations and Training:

a. Combat Support Operations: During this period, the 159th Engr Gp participation in combat support activities decreased. Engineer dump trucks of the 43d Engr Co (DT) were committed to support the logistic effort during OPERATION ATTLEBORO, and the 643d Engr Co (PL) was used to construct POL tanks on the same operation. Engineer dump trucks of the 169th Engr Bn and the 43d Engr Co (DT) supported OPERATIONS FAIRFAX and LANAKAI in November 1966. Route maintenance and bridge security were conducted by elements of the 169th Engr Bn (Const), the 15th Engr Bn (Cbt), and the 46th Engr Bn (Const) on OPERATIONS DUCK and IOLA in the movement of troops from Vung Tau to Long Thanh. Co C, 577th Engr Bn and 617th Engr Co (PB) deployed to Dong Tam and constructed two tactical Bailey bridges in support of the 9th Inf Div in Jan 67. Numerous pieces of equipment were provided from the 159th Engr Gp for various combat support missions, to include use of the 159th Engr Gp Rome plows in OPERATION CEDARFALLS. The 617th Engr Co (PB) provides continuous tactical bridging support on a on-call basis.

b. Construction Operations:

(1) General: During the period the primary work effort of the 159th Engr Gp has been the development of the Long Binh complex, which will serve as the future headquarters for USARV and 1st Logistical Command. The operational facilities and cantonment areas required by the movement of these major units from the Saigon area have necessitated a heavy and continuously expanding program of priority construction. Close coordination and cooperation with the civilian construction contractor RMK-BRJ Inc, has been essential to permit both troop and contract construction to keep pace with the rapid development of Long Binh.

In other areas of the Group, the arrival of new major tactical units caused the commitment of construction forces to the Long Thanh (Bear Cat) area and to Dong Tam in the Delta region. The arrival of the 62nd Engr

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Bn (Const) was a definite asset in relieving the work pressure on the Long Binh area. The employment of the 643d Engr Co (PL) with its specialized personnel and equipment also contributed measureably in starting work on the high priority POL projects.

This reporting period was one of generally good construction conditions due to the dry seasonal climate. This good weather permitted extensive horizontal work effort and the period has been one of maximum production for all types of equipment. Dust has been the only significant natural delaying factor.

Engineer projects are initiated by either an Engineer Command Directive or a 159th Engineer Group Directive which define the scope of work, funding source, expenditure limit, and the required beneficial occupancy and estimated complete dates. Also provided are any additional instructions relative to procurement, siting, or necessary coordination. When possible, the Group provides further definition as to details of the construction. Each new directive is reviewed by the Group Engineering Section (discussed later in this report) and then by the operations sections to coordinate construction methods, equipment distributions and scheduling.

(2) Projects and related activities:

Projects completed this period:

(a) Long Binh Post Headquarters Area: Post Headquarters consisting of 25,000 SF of office, admin, and services buildings, with roads and parking areas.

(b) Brigade or Regimental Size Staging Area - Long Binh: Roads, drainage, hardstand, latrines and showers covering a 50 acre area.

(c) Saigon PX Storage Area: Roads and wooden pads for storage area.

(d) Cantonment construction in Long Binh: This work under several directives includes roads, foundation pads, mess halls, latrines and showers for approximately 10,000 troops. Support with equipment and supervision for self-help construction to occupying units was also provided.

(e) Clearing of Maintenance and Supply Area: Over 350 acres of jungle clearing with Rome plows and standard bulldozers for a future construction area.

(f) Water Storage Tanks and Fill Station: Constructed at Long Thanh for water well supply.

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(g) WAC Cantonment Area - Tan Son Nhut Air Base Saigon:
Living quarters for WAC unit complete with waterborne sewage.

(h) 400 Man USARV Stockade - Long Binh.

(i) Repair of USARV Headquarters - Saigon

Projects under construction during the reporting period in the Long Binh -
Bien Hoa - Saigon Areas:

(a) Taxiway, Ramp, and Open Storage - Tan Son Nhut AFB:
Approximately 34,000 SY of stabilized area with base course and single
surface treatment.

(b) ADA Sites - Long Binh: Operational Artillery
Battery Cantonment including all provisions for Hawk missile sites and
support.

(c) 6,000 Man Replacement Center - Long Binh: Mess
halls, billets and facilities to support incoming and outgoing military
personnel.

(d) 400 Bed Hospital - Long Binh: Complete facility
including surgical suites, pre- and post-operation buildings, wards, dis-
pensary, mess, laundry, supply, admin, nurses quarters, for 24th Evacuation
Hospital.

(e) Class I Area - Long Binh: Includes installation of
3 large reefer complexes, drainage provisions and hardstand areas for Class
I supplies.

(f) Communication Facilities - Communications Center
in Bien Hoa and a 40 x 130 Dial Central Building in Long Binh.

(g) Long Binh Ammunition Depot: This large project
consists of the roads, drainage and pad construction to provide 199 ammu-
nition storage points. Commensurate with this construction have been
projects to enhance the ASP security to include clearing of over 1400 acres
of jungle, construction of a perimeter roadnet and assistance in erection
of a lighting system.

(h) Support of IIFV Complex - Long Binh: This work
consisted of additional headquarters and support facilities to include
Aviation Maintenance buildings, a Map Depot, a PX Warehouse, and other
miscellaneous construction tasks.

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(i) Mallard Cantonment - Long Binh: Construction of an isolated cantonment for one Tank Bn and one Arty Bn to include all operational facilities, and complete road net, and hardstand for billets and motor pools.

(j) McNair Class II and IV Yard - Long Binh: Five miles of roads and 92 acres of hardstand for Open Storage.

(k) Barge and off-loading pier - Thu Duc: Port facility on a Saigon River tributary for rock off-loading.

(l) POL Pipeline - Saigon: POL pipeline construction from Saigon River through built up city area to TSN AFB, and construction of a tank farm.

(m) Water Supply Systems - Long Binh: Construction of pump houses, tanks and fill point stations for five separate wells in the Long Binh Area.

(n) Asphalt Paving Project - Long Binh: Hot mix asphalt paving of the interior roads of Long Binh Post is in progress with portions of 2, 3, and 4 lane roads paved to date. Target is the equivalent of 5 1/2 miles of 2 lane road paved by May 1967.

(o) Road Construction for Long Binh Post: Approximately 10 miles of interior roads, including the Outer Loop Road have been constructed this period.

Projects under construction at other sites:

(a) 15,000 Man Cantonment at Long Thanh (Bear Cat): Consists of 9th Inf Div Base Camp facility. Includes roads, buildings, helicopter complex and related troop facilities.

(b) 7,500 Man Cantonment at Dong Tam: Consists of Brigade Base Camp to include operational facilities, billets, and airstrip.

(c) Port Facilities at Vung Tau: A 1200 foot rock causeway to a DeLong pier complex to provide a deep draft docking facility.

(d) POL Depot at Vung Tau: Construction of an 100,000 bbl tank farm, truck fill stand, pump complex, and feeder lines.

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(e) Barge Loading Facility at Vung Tau: Construction of pile pier adjacent to the new causeway to provide for rock loading of barges.

(f) Vung Tau Airfield Rehabilitation: Complete double surface treatment of 4500 foot of main runway. PSP surfacing of other areas of airfield.

In addition to the major projects listed above, the following operations have been continuous in support of the construction program:

(a) Prefab Operations by Battalion Carpentry Shops to furnish latrine and shower kits, prefab buildings, and prefab towers.

(b) Laterite Pit production for 159th Engr Gp projects. (Output totaled over 353,902 CY for the period).

(c) Quarry Operations for fill, concrete aggregate, and asphalt paving production.

(d) Dust Control utilizing penoprime, diesel, oil and water. (Approximately 982,513 SY surface covered)

(e) Support to non-engineer units: Provision of equipment, technical assistance, materials and tools to other units for authorized construction purposes.

(f) Continuous road maintenance to include bridge and culvert repair of Group roadnet.

(g) Water purification by 159th Engr Gp water purification units (total gallons produced was 4,554,850).

c. Engineering: Working closely with the 159th Engr Gp Operations Section, the Engineering Section has played a important role in the Group effort this period. This section has been active in quality control of all soils work, in mix design and control for asphalt production, in preparing tests for sand/soil or laterite stabilization, and other work on materials usage. In addition, this section has assisted in the design and layout of Base Development for several large cantonments, and has acted as the Real Estate coordinator for the 159th Engineer Group. The proper execution of the DD 1354, Real Property Transfer Document, has been another major responsibility of the Engineering Section. Management of a large survey force, including contracted civilian teams is also controlled by the Engineering Section. The engineering design work

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accomplished has also been significant this period due to the complexity and specialization in such projects as POL and port facilities. Engineering reconnaissance for local construction materials borrow pits was also conducted by the Engineering Section.

6. Logistics :

a. Logistics and Supply: Although large quantities of construction supplies are being shipped into Vietnam, the combined efforts of Engineer troop effort and "self-help" construction programs have exhausted stocks almost immediately upon receipt. During the period covered by this report, 2 inch lumber, water storage tanks and electrical supplies have been and continue to be critical for all construction projects.

Construction under the "self-help" program is limited to standard facilities using standard Bill of Materials as designed and calculated by the 159th Engr Gp Engineering Section. Supervision of the self-help program has been by 159th Engr Gp units on a area responsibility basis. All troop billets in the Long Binh Area, unless specifically otherwise authorized, are constructed by the tenant unit regardless of branch or type of unit. The ADAMS (Advanced Design Aluminum Military Shelter) Hutment is the authorized troop billet in the Long Binh area and has been successfully erected by various units with technical and equipment support from the 159th Engr Gp.

Obtaining rock and sand to meet construction requirements has been a continual problem due to the lack of convenient local sources and transportation difficulties. A contract for 100,000 CY of rock was awarded to a Korean firm for rock delivery to Vietnam from Korea. This contract, which has delivered one shipload of about 8500 CY to date, has been plagued with problems of gradation control, shipping schedules, port facilities, equipment availability, and difficulties with Vietnamese labor authorities. With these obstacles, and the possibility of contract delays and claims, procurement through this source is considered unsatisfactory and in jeopardy of being cancelled.

To solve the acute shortage of rock in the Long Binh and Delta Areas, two solutions were initiated in January 1967. One is a contract awarded to a Vietnamese truck contractor to haul rock from the Vung Tau Quarry to Long Binh via National Route 15, a relatively insecure road for US traffic. The other means is barge shipment via the deep water rivers about Saigon and in the Mekong Delta area. Both appear to be worthwhile solutions.

The drilling and development of water wells to include installation of submersible pumps, in-line chlorinators, storage tanks and truck fill stands has greatly relieved the water supply problem in areas of large troop concentration. The wells are drilled and cased and pumps installed

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by civilian contractor and all other facilities are constructed by 159th Engr Gp effort. It is expected that this work should relieve the continuous operation of water purification units of this command.

Under the supervision of the 159th Engr Gp S-4, the Group Food Supervisor has conducted an active program to maintain the highest possible mess standards. It is a credit to the Group that 19 Field Messes assigned or attached are operating in semipermanent buildings with full refrigeration. Operational standards and procedures are the same as used in CONUS. The Group sponsored Best Mess Program has proved successful in providing keen competition between messes based on best all around food service practices. The monthly winner is presented a plaque award by the Group Commander. A definite improvement in the menus was noticeable during the reporting period due to the development of the central GI I reefor complex at Long Binh which provides fresh vegetables and other fresh produce formerly not available.

b. Maintenance: A sound maintenance management program is essential to support 20 hour per day operations and has received continuing command emphasis. The first hour of each 10 hour shift is a supervised maintenance period. Classes have been conducted for officers and NCO's to improve the quality of supervision. The supervision of preventive maintenance by leaders, e.g. squad leaders, platoon sergeants, platoon leaders, has been emphasized in this Group, with significant results. Frequent inspections of maintenance periods and equipment on work sites were made by Group maintenance personnel and problem areas were brought directly to the attention of commanders concerned. Significant problem areas are brought to the attention of all concerned via a weekly command maintenance letter, which also compares the weekly deadline rates of all units. To stress the important role that drivers and mechanics play, a Driver and a Mechanic of the Month are selected. These individuals receive a letter of commendation the Group Commander and a three day pass to the in-country R&R center.

To minimize the effect of hot, dusty conditions and muddy conditions during monsoon season in the area, the lubrication intervals specified in lubrication orders are halved.

During the period, new model crawler and wheeled tractors were received. Prior to operating this equipment classes covering operation and maintenance were conducted.

Construction battalions in the Group have an organic direct support maintenance capability and have been able to handle much of the direct support maintenance. Direct support maintenance and repair parts support for separate companies and back up for battalions is provided by the 185th Maintenance Battalion (DS) for units located at Long Binh. The 2d Maintenance Bn (DS) provides maintenance support for units located at Vung Tau. Support at Long Binh is considered outstanding.

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The direct support maintenance battalions also provide repair parts support. Repair parts supply has been a problem and has caused a weekly average of 19 major items deadlined over 30 days. The Red Ball express system has helped, however only 55% of Red Ball requisitions submitted in Oct, Nov and Dec were filled. Fill time averages 35 days.

The average deadline rate for critical items of equipment was 11.6% during the period, with an overall deadline rate of 6% for ordnance - automotive and engineer equipment.

6. Force Development: One force development feature used by the Group Commander during this period is the appointment of a Vung Tau Project Officer. This officer, a major from the Engineer Section of the Group Staff was placed on TDY to the 46th Engr Bn, and acted as the overall control and coordinating authority for elements of D Co/46th Engr Bn, the 536th FC Det and the 103d CS Co Quarry Platoon. On large projects, such as the airfield rehabilitation, the Project Officer closely monitored and supervised the efforts of those units involved without interfering in each unit's administration and individual missions. This relationship proved successful and workable particularly due to the fact that an experienced officer could devote his full energies to the actual project activities without being hampered by other command responsibilities.

Another special force innovation initiated this period was the consolidation of all electrical personnel within battalions. This was suggested by the Group Commander as a means of controlling and centralizing the trained electrical personnel (of which some companies were short) and of permitting the consolidation of critical electrical supply items for better management. This approach is still being tested, and preliminary results are favorable.

7. Command Management: In November 1966 the position of Contract Liaison Officer (in grade of Lieutenant Colonel) was established at Group level to coordinate the construction activities of the Group with the Navy OICC construction being accomplished by the RMK-BRW civilian contractor. This position has primary responsibility for all liaison between the various construction agencies working in the Group area, and for monitoring the construction progress of these agencies. The Contract Liaison Officer has been particularly helpful in providing timely information on construction planning in Long Binh; and in coordinating the many joint construction problems. The CLO also coordinates the activities of contractors engaged in well drilling and in power plant and distribution system construction at Long Binh, Vung Tau, Bear Cat, Dong Tam, and Saigon (Newport).

In January, the Group established full time Safety Officer and Safety NCO positions to help reduce accidents. A review of the number and type of accidents, the contributing factors, and the rate of incidents was made

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and the statistics were analyzed to help understand previous accident factors. Under the safety officer's supervision a general safety campaign has been initiated to improve the safety record of the entire Group. Among the steps taken have been a safety patrol on the Long Binh Highways, motor pool and on-site safety inspections of equipment, safety letters on personnel and vehicle accidents, and publication of a new Group Safety SOP. Inspections of all units on a scheduled basis will be conducted to cover all safety considerations to include fire prevention, personnel accidents, vehicle safety, and unit safety training and management.

To provide closer control and a better understanding of significant engineering features of specific projects, a weekly Engineering Conference was started this period by the Group Commander. This evening meeting is conducted with the Group Staff and the construction unit (Bn or separate Co) concerned with the particular project to be discussed. Engineering solutions, possible trouble areas, design modifications, methods of production or construction, etc., are typical of topics discussed with the goal of more efficient and economic work. It is felt that these meetings are a useful tool to eliminate problems and to concentrate engineering knowledge on the elimination of specific obstacles to work progress.

The incorporation of the Monthly Project Status Report into a computer data processing format during this period represented a major change in the reporting of man-hour expenditure and project completion status. The automatic data processing format included additional feeder information such as the breakout of directive projects into the separate facilities as defined by AR 415-28 and separate identification of self-help man-hour expenditures. Initial submittals and results suggested that the conversion from manual to computer submittal was not an improvement due to the "bugs" still present in the programming routine and inaccuracies in the preparation of input. Also, it was noted that the Group Commander had lost a valuable management tool due to the time required to obtain the output after the monthly submittal. It is expected, however, that most complications regarding the automatic data processing procedures will work themselves out as the system is refined and more computer time is available for processing.

An additional command management tool has been the monthly publication at Group level of Engineering Notes - a compilation of observations, lessons learned, construction practices, new solutions to problems, expedient methods, etc, that are noteworthy of dissemination and distribution to other units. These items are generally confined to strictly engineering problems and field solutions that have proven successful to one unit or section. By publication and distribution of these topics at monthly intervals all units of the Group can profit by the experiences of other units.

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8. Inspector General: The Group has an Acting Inspector General for the purpose of receiving and processing complaints. An average of two complaints per month have been received at Group level. All complaints have been resolved by the Group Acting Inspector General. One battalion of the Group has been inspected by USARV IG Team this period, and other units including HHC, 159th Engr Gp will be inspected in the coming months.

9. Information: Information activities of the 159th Engr Gp were primarily focused on home town news release submittals and feature stories of local construction activities. Many news articles especially those concerning civic action work have been published in the USAECV(P) Castle Courier newspaper. The recent appointment of a full time Public Information position (EM) is expected to improve coverage of the Group activities. Also, increased emphasis on photographic coverage of the 159th Engr Gp activities has been made this period. The photographs are used for display, progress reporting, reconnaissance, and news publication. A well trained and versatile photographer has proven to be a definite asset to the Group.

10. Civic Affairs: Group participation in civic action in furthering the Revolutionary Development activities of the Republic of Vietnam has been limited due to the heavy commitment of engineer effort to priority military construction. Because of the limitations of time and materials, and the low availability of equipment for this type work, units generally will only undertake those projects which maybe accomplished in 4 to 8 hours with only one or two pieces of engineer equipment. This, however, has not limited some more ambitious long term projects such as schools and assistance to orphanages. The Vietnamese people are cooperative in the civic action work, and have been responsive in expressing their needs and appreciation.

The following are highlights of the civic action work this period:

- a. Joint American-Vietnamese construction of a four room school, with generator, library and supplies at Da Minh.
- b. Joint American-Vietnamese construction of two village schools in Vien Giac and Tan Mai.
- c. Sick call treatment of over 500 individuals.
- d. Distribution of soap and other household commodities.
- e. Voluntary contributions of over \$300.00 to orphanages and needy institutions.

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f. Educational efforts in teaching English to about 80 children and about 20 adults on a daily and weekly basis.

This Group has been the pilot unit for an Engineer Command program to train Vietnamese as equipment operators. The first course was conducted for light vehicle operation and has graduated 35 licensed operators. A heavy vehicles course is now in session, and training on other engineer equipment will begin soon. It is expected that this program should be of tremendous future value to the Republic of Vietnam in providing skills necessary for large-scale construction operations.

Experience has shown that the best civic action work is that which helps the Vietnamese help themselves. One-way US assistance does little to contribute to support for the Vietnamese government and to instill pride in the people. Consequently, joint work projects are considered more valuable to the overall civic action objectives.

Section 2, Part I, Observations (Lessons Learned).

1. Item: Coating of 6" API Pipe for Burying.

DISCUSSION: The need for devising a substitute method for coating 6" API pipe for a buried POL arose. The synthetic burlap was issued through the supply system as a substitute for natural burlap normally used in the process of protecting buried pipelines. The synthetic burlap was found unsuitable due to the fact that it shrunk appreciably when the hot AP-3 was applied to it. We found that by applying AP-3 directly on the pipe with an asphalt heating kettle equipped with a spray bar in sufficient quantity to provide a coating of $\frac{1}{4}$ " to $\frac{1}{2}$ " of asphalt that the end result was equal to that obtained by using a combination of burlap and asphalt.

OBSERVATION: In areas where supply shortages of natural burlap dictate, AP-3 or an acceptable substitute may be directly applied to pipe for burying operations in lieu of using a combination of burlap and asphalt.

2. Item: Welding of 6" API Pipe in congested areas.

DISCUSSION: While welding 20 foot sections of 6" API pipe together in a congested area of a major city we found that the excessive time that our welding trailers were needed along the pipeline to weld single sections together seriously restricted or completely stopped the flow of traffic along the road. A method was devised by which two twenty foot sections of pipe were welded together in a non-congested area away from the road and transported to the job site by a pipeline construction truck. The

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double sections were then welded together on the line to make a completed section of pipeline for burying.

OBSERVATIONS: By welding two twenty foot sections of pipe together in a non-congested area approximately 50 % less time need be spent along roads in congested areas to weld the complete section of pipeline in a congested area. This procedure alleviates serious blockage of traffic for long periods of time.

3. Item: Use of Standard Drawings:

DISCUSSION: New units arriving in Vietnam are always faced with the problem of establishing a base camp. Units are required to build their area at the same time they are establishing operational procedures. An additional work load is placed on a unit that has to design its own facilities.

OBSERVATION: The use of standard drawings for billets, mess halls, showers-latrines, water towers, maintenance buildings, and administration buildings has greatly aided new units in the initial phase of their planning and construction. Units can start construction immediately without extensive design work.

4. Item: Laterite & Cement mixture.

DISCUSSION: Crushed rock is very hard to obtain in the Long Binh Area. The Group soils lab has tried many concrete mixes substituting laterite for crushed rock.

OBSERVATION: The structural strength of laterite-cement did not prove adequate. In breaking the samples we observed the laterite failed before the cement. The laterite also had to be sifted to eliminate an excessive amount of clay fines.

5. Item: Soil Stabilization.

DISCUSSION: In many areas the units have to work with sandy loose soil. The problem has been to find a method to stabilize this type of soil.

OBSERVATION: A 10% cement by weight is mixed with the soil, a hard wearable surface is obtained in some soils. This method has proved successful in other areas in Vietnam. Testing is required to determine the correct soil-cement ratio.

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6. Item: Asphalt Mix Design.

DISCUSSION: More fines were required by the asphalt plant production than were being produced by the available rock crushers. Sand was suggested as substitute for the fines. The sand available was river run sand with rounded particles.

OBSERVATION: After sieve analysis of the gradation of the aggregate and sand, a mix design was obtained substituting sand for a portion of the fines. The new design allowed the paving operations to continue until more fines were made available.

7. Item: Drafting Room.

DISCUSSION: The high temperature and humidity in Vietnam make drafting work very difficult. Perspiration and dirt made it difficult to keep the tracings neat.

OBSERVATION: Partitioning the drafting section and installing an air conditioner improved the drafting capability. This action clearly resulted in greater efficiency and neater drawings.

8. Item: Use of Grubbing Plows.

DISCUSSION: The grubbing plow, a crawler tractor attachment with large teeth resembling those of a pitch fork, is a valuable piece of equipment for clearing operations. This type of plow enables the operator to grub out roots from the ground and push these roots and other vegetation into piles without stockpiling soil in front of his blade. The soil simply passes through the teeth of the plow. By eliminating the stockpiling of soil along with the grubbed vegetation, the piles can be more completely and effectively burned. Furthermore, the sizes of the piles are reduced; thereby enabling the dozer to operate more efficiently since it would push only vegetation and not soil.

OBSERVATIONS: It is recommended that the US Army issue this type of attachment to its construction units in Vietnam. The grubbing plow has proved itself to be a valuable piece of equipment in this theater. It is currently a standard piece of equipment on all clearing and grubbing operations conducted by RMK-BRW contractors.

9. Item: Local Materials Contracts.

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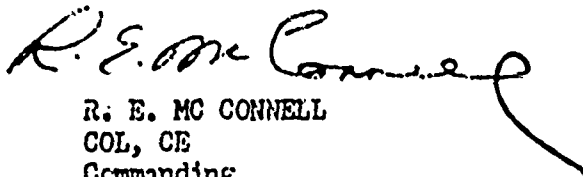
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DISCUSSION: Unsatisfactory materials have been procured from local
sources due to inadequate procurement specifications and lack of means
to insure specifications are met.

OBSERVATION: All contracts should have complete engineering specifica-
tions and provisions for enforcing quality control.

Section 2, Part II, Recommendations: NONE


R. E. MC CONNELL
COL, CE
Commanding

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HEADQUARTERS, UNITED STATES ARMY ENGINEER COMMAND
VIETNAM (PROV), APO 96491 3 MAR 1967

TO: Commanding General, United States Army, Vietnam, ATTN: AVHGC-DH,
* APO 96307

1. The subject report, submitted by the 159th Engineer Group (Const), has been reviewed by this headquarters and is considered adequate.

2. The recommendations and comments have been reviewed and this headquarters concurs with them, subject to the following comments:

a. Section 1, paragraph 2, page 4, reference personnel shortage. During the reporting period, personnel input for MOS 51H and 62E were received in the following totals; 51H - 8, 62E - 295. Based upon monthly personnel rosters submitted by units, assignment of the above MOS was made in accordance with a prorated requirement. The 159th Engineer Group (Const) received the following; 51H - 6, and 62E - 94.

b. Section 1, paragraph 2, page 5, reference recurring reports. On 8 January 1967, the USAECV (P) Reg 335-5, Recurring Reports was published. This regulation clarified the recurring reports schedule and eliminated all unnecessary reports. The requirements for "one-time" reports have been originated from higher headquarters. This headquarters is now in the process of collecting data to answer these type reports without having to go down to subordinate commands.

c. Section 1, paragraph 6, page 11, reference logistics.

(1) Critical shortage of construction materials are recognized by all logistical agencies. Expedited shipment of the materials from CONUS and adjusted forecasts for requirements are actions underway to improve this situation.

(2) Cancellation of the "Korean Rock Contract" is under study at USARV level.

(3) The 159th Engineer Group (Const) has the the lowest dead-line rate in the command. Red Ball Control Office, Vietnam is fully aware of problem areas; recently, REX (Red Ball Expanded) has been initiated to enable direct support units to requisition needed parts for ASL's.

d. Section II, Part 1, paragraph 3, page 17, reference use of standard drawings. This headquarters is currently gathering the standard plans used by the various elements of the command to standardize Engineer Command plans for use of all units in building their cantonment areas.

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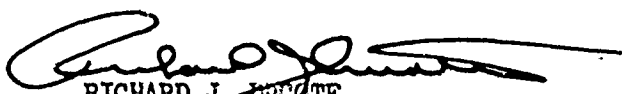
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e. Section II, Part 1, paragraph 8, page 18, reference use of grubbing plows. This headquarters will investigate the requirements for grubbing plows and initiate procurement action if warranted.

f. Section II, Part 1, paragraph 9, page 19, reference local materials contracts. All future procurement contracts by this headquarters will include sufficient specifications and control measures.

FOR THE COMMANDER:


RICHARD J. LUCOTE
Colonel, SE
Chief of Staff

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31 January 1967 (RCS CSFOR-65)

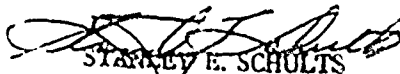
HEADQUARTERS, UNITED STATES ARMY VIETNAM, APO San Francisco 96307 27 MAR 1967

TO: Commander in Chief, United States Army, Pacific, ATTN: GPOP-OT
APO 96558

1. This headquarters has reviewed the Operational Report-Lessons Learned for the period ending 31 January 1967 from Headquarters, 159th Engineer Group (Const) as indorsed.

2. Concur with the comments contained in the report, as modified by 1st Indorsement.

FOR THE COMMANDER:



STANLEY E. SCHULTS

Major AGC

Asst Adjutant General

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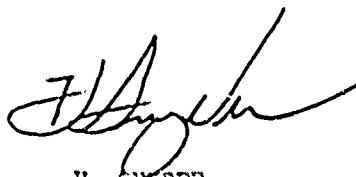
SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 January 1967 (RCS CSFOR-65), HQ 159th Engr Gp (Const)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 28 APR 1967

TO: Assistant Chief of Staff for Force Development, Department of the
Army, Washington, D. C. 20310

This headquarters concurs in the basic report as indorsed.

FOR THE COMMANDER IN CHIEF:



H. SNIDER
CPT, AGC
Asst AG

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